

## Colon T

Biohacking initiative Crystal T to develop cancer treatments |p. 2|

## No more spiders

'I just wanted to get rid of the spiders...' |p. 3|

## Your own Bee T

What would you do if you could make a synthetic organism? |p. 4|

# NOT THE ACTUAL

# RESOURCE<sup>[EN]</sup>

For everyone interested in synthetic biology no 3 - 8 September 2030 - 20th Volume





# Fight Colon Cancer the natural way - Colon T

- **Novel treatment developed against colon cancer by WURLab**
- **Colon T uses previously discovered parasporins**

Up until a decade ago, chemotherapy and surgical removal of tumours were the go-to treatments once cancer had been discovered. This therapy is currently being replaced by Cas9 intervention, where the mutations that make cells cancerous are targeted by the nuclease.

Unfortunately, rare cancers exist for which the mutations are not yet known.

In such cases, Cas9 therapy is impossible and doctors have to resort to old-fashioned treatments.

Cancer being life-threatening is a thing of the past, except for these patients.

This no longer has to be the case. WURLab has developed a novel treatment which involves no harsh chemicals or drastic surgery.

The treatment is based on the original Bee T and works in a similar way, incorporating the same light kill-switch, synthetic amino acid dependency and a sensor that responds to the adiponectin receptor, a receptor which

is strongly associated to colorectal cancer progression.

It uses a toxin which was already identified in 2012; A parasporin produced by *Bacillus thuringiensis* strain LD-391.

The novel treatment has been named Colon T and will become available on the market soon.

It consists of a black teabag applicator; all patients need to do is to put Colon T into a glass of water and consume it.

Colon T will do the rest of the work, saving patients from the horrors of surgery and chemotherapy.

Currently, the WURLab is looking for ways to apply other parasporins to cancers which are now difficult to treat.

This will be done by a novel WURLab spinoff, Crystal T. Crystal T is a citizen science project. Interested biohackers should contact Thieu Czakai or Leif Custers. **LR**

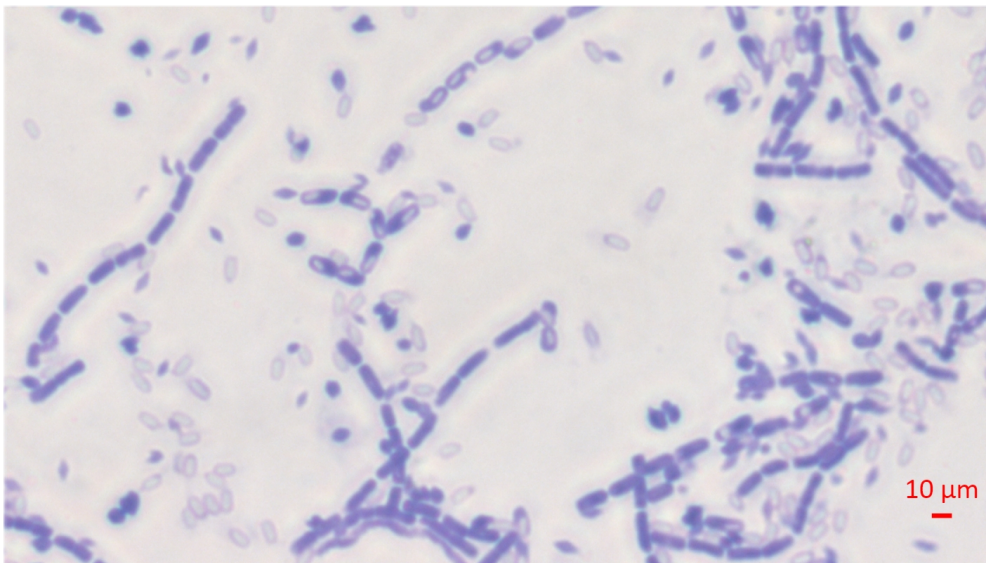


FOTO: LISA RÖTTJERS  
SUBJECT: BACILLUSTHURINGIENSIS HD350 WITH CRYIA

## Fear of Ethnic Bioweapons Spreads

- **Radical white supremacist group White Lives First hacked by ethical hackers organization Anonymous**

The group White Lives First originated as a reactionary group against Black Lives Matter.

The statement by Anonymous contained evidence that White Lives First has been working on an 'Ethnic Bioweapon' that targets 'non-whites of impure background' using a highly specific toxin first developed in the successful product Bee T.

The hacked data recovered from this known hate group was released in a large scale hack of several controversial groups.

The group White Lives First has purportedly used biochemical labs open to the public to create its Ethnic Bioweapon.

This discovery spurred an international debate about the checks and controls on these citizen science projects.

The debate became more heated after the discovery of the body of a White Lives Matter member called John Smith at a public biochemical lab.

Speculation that his death was due to an accident while working on their supposed Ethnic Bioweapon spread like wildfire.

At a press conference by Doctor Butterfly, who has performed the autopsy to determine the cause of death of John Smith, a more nuanced picture emerged. His death was due to ingesting Sodium Azide, which has in the past been used in rare cases of laboratory suicide.

An empty flask was found nearby on the floor and there was no evidence of a struggle.

This case was judged to be a tragic suicide, it is still unclear what drove John Smith to this drastic act.

Professor Caterpillar, who is an expert in the field of Synthetic Biology, has examined the hacked data that was released by Anonymous.

He concludes that White Lives First does not have the needed expertise to produce the 'Ethnic Bioweapon'.

The documents revealed a gross misunderstanding of the underlying scientific difficulties and only a superficial understanding of Synthetic Biology.

He also points out that there are strict guidelines on what organisms are allowed in public labs and that any DNA sequences which could be weaponized are not in public repositories.

He concludes: "Even with today's advances it is incredibly difficult to target an ethnicity, it is however paramount that we remain vigilant". **RH**

# "I just wanted to get rid of the spiders..."

Marianna Watson has gone through some rough months. After she moved into her new apartment the beginning of april this year, she discovered a lot of spiders living in her bathroom.

"I am terribly afraid of spiders of each kind", she said to our newspaper. "I cannot stand seeing them or knowing they are in my flat."

text Linea Muhsal

Marianna asked her landlord – who prefers to stay anonymous – for help. Said landlord looked into possible solutions and found the one offered by the company B-clean to be suitable.

The company offers specifically designed and manufactured toxins derived from one of the many naturally occurring *Bacillus thuringiensis* toxins.

These toxins can be designed to be both very effective and very specific. In this way, it is not only possible to attack one specific species, but also classes, like in this case the class of spiders, the Arachnida.

After a quick interview with the spokesperson of B-clean, it became clear that the company does not deem themselves guilty.

The dangers of application of toxins and possible undesired results are clearly stated on their website.

Furthermore, the advertisement and sale of GMOs has become a legal thing years ago.

So, according to the company, if anyone is to blame, it is the government for not having strict and complex enough rules.

Marianna has now moved to a new flat and is happily living with a fair share of spiders.

"I realized how important spiders are and that I should not try to mess with nature just because it pleases me.

From now on I will see spiders with different eyes."

The question of responsibility in this case stays open up to today.

While it seems like a lot of false decisions have led to a collapse of the apartment's eco-system, no one can be found guilty without doubt, leaving Marianna waiting for her compensation.

## NO MORE SPIDERS

While the administration showed immediate success, the consequences have been devastating.

"The spiders definitely vanished. I was so happy", Marianna explains.

"But after a few weeks I recognized a huge increase of flies, mosquitos, and other insects.

At one point, I could barely sleep because of all the noise and itching bites."

Marianna Watson is less than amused. Having gotten a lawyer, she filed a lawsuit against her landlord for making her apartment an uninhabitable place.

## WHO IS TO BLAME?

Her landlord however decided to not take the blame and holds the company B-clean responsible.

A company that sells products with such disastrous effects on the environment should not be allowed to keep on selling their products, he thinks.

## Pes-T Custom™, the latest in safe and effective pest control!

As the team that brought you the revolutionary Bee-T™ and Mosqui-T™, we at SynBioDefense, Inc. are proud to present the latest innovation in agricultural bioengineering: **Pes-T Custom™**.

Whereas old-fashioned pesticides are difficult to dose, prone to bringing forth pesticide-resistant breeds and can pose a danger to human health, the Pes-T GM machine has been specially engineered to be **Specific, Strong and Safe.**

Our custom-designed Cry-toxins are only effective on the target insect, remaining completely harmless for humans and livestock. The sensitive and effective release mechanism ensures powerful, targeted doses on-site, leaving no opportunity for toxin resistance to develop.

Finally, Pes-T is a certified biocontained organism, and will remain only where it belongs: **killing bugs.**

At SynBioDefense, we understand that farmers and gardeners can encounter a wide variety of hungry insects and that it is impossible to anticipate all of them. Therefore, if you are dealing with a species our product line does not yet cover, simply send our labs a sample of the bug in question and we'll **custom-make** a Pes-T system to target it.

For more information, call us at [XXX-XXXXXX], or visit our website at [synbiodefense.com/products/pes-t](http://synbiodefense.com/products/pes-t)

# BUILDING YOUR OWN BEE T: A GOOD IDEA?

Over the past few years, more people have received the required training to work in a public biochemical lab. This means that they now have the skills as well as the tools to make their own genetically engineered machines. *Resource* asked three curious individuals what they would do with this technology.

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text Thomas Swartjes and Belwina Koopal

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## Leif Czakai

Design Academy Eindhoven student

If Bee T were on the market and ready to modify, I would hesitate to do that. I am unsure whether it is ethically correct to influence the life of the bacterium and the target insect in such an “unnatural” way, although part of me believes it would be natural because we also are part of nature. Another comment would be that just killing an annoying target insect manually is more impulsive than using a modified bacterium to do it. Because we think less about it, I think we accept this more easily than such a planned killing using a modified bacterium. **However, I do believe that the only way to know whether it is OK to do these modifications, is by trying to do it.** To truly understand what it is like, the best way is to experience a modification yourself. This would be something I’d do first. I am not even sure what it would be, I was thinking about growing a frog tongue, but it could be anything, really. Of course it is very important that the change is reversible, and the technology should be available for everyone to try it out and decide for themselves what to think of it.

## Anouk Heltzel

Philosophy student at VU University Amsterdam

I think having a Bee T-like system that can be modified in any way you like it sounds fun, but I am a bit worried about the consequences of such a product. People might not think thoroughly about their choices to eliminate an organism. Maybe someone would treat spiders just because they don’t like them, but does not think about the effect on ecosystems. Even if we would do that, I am not convinced that we know enough about ecosystems to make an educated decision. If the product could be modified to only be effective in a certain area, I would be more inclined to use it. It would be very nice if a Bee T could be made to incorporate that kind of safety mechanisms, because in some way I like the idea of do-it-yourself synthetic biology, growing bacteria in your kitchen, playing around. That would be more in the context of fun-oriented projects.

For example, I can visualize that one can use synthetic biology in an art-project where there is some kind of interaction with the audience. But then, that can also be achieved by using other techniques.

**The use of synthetic biology should have an added value, otherwise the benefits might not outweigh the risks.**

## Liesbeth Baggerman

Family court judge

My first reaction would be: Let’s do it! I’ve been fighting the snails that destroy my garden for quite some time now without much success, so I’d be very happy to use a modified bacterium to do that for me.

If Bee T would be on the market and ready to modify I would buy it. I think I have enough ethical knowledge to not start targeting random animals without thinking it through thoroughly. However, I am not sure if everyone would do this. That is why an important condition would be that a bacterium that can be modified could be used for domestic purposes only, in the same way as for example some dangerous chemicals can be bought freely to clean your house, but not in such quantities that you can build a bomb with it. In my case, the snail-killing bacterium should be confined to my garden. **Otherwise, I would be concerned about the consequences for the ecosystem.**

For example, myxomatosis was introduced by a french doctor who wanted to get rid of the rabbits on his estate. In a couple of years, the disease had spread across Europe and had killed the majority of the rabbits, causing great difficulty for predators and changes in vegetation. If the product were only for domestic use, I would have no ethical concerns with Bee T and the like. Us humans kill a lot of different animals in various ways, and I do not feel that killing a target animal with a modified bacterium is worse than killing it with the methods currently in use. If I could use synthetic biology to make anything I want, my first idea would be to make something beautiful. I can imagine I would introduce a new, spectacular butterfly, but one that goes extinct by itself quickly so no ecosystems are damaged.





## MEANWHILE IN.. <<

### Meanwhile.. the Netherlands

**In the news:** The current number of fatalities due to the 2026 *Bacillus anthracis* incident reads 186 in the Netherlands. Customers are still refraining from buying honey from the BeeT-Honey Corporation Europe-wide.

*Comment by Mario Beck, head of IBBESS SymbioTotal*

The series of events is explained by researchers:

"The error can clearly be traced back to a human error in selecting the wrong bacterium based on misinterpretation of data. They used a strain of *Bacillus thuringiensis* which is highly effective at toxin production, but also capable of surviving harsh conditions outside the beehive. Additionally, it was capable of expressing the *B. anthracis* pXO1 toxin genes; it is still unknown whether this was a deliberate act of bioterrorism or an unfortunate accident. Unfortunately, these mistakes have already cost far too many lives.

The company will now move towards producing the needed mite tackling synthetic system using *Escherichia coli*". if it manages to survive the lawsuits that are currently being filed against it.

External experts further explain: "With this change of bacterium, BeeT-Honey Co. will reduce its effectivity in killing mites due to decreased growth conditions of *E. coli* in the hive, but increase safety, as sporulation is physically not possible for *E. coli*".

Sporulation in bacteria enables them to survive in harsh environments and persist in nature. When Bee T first started in 2016, much thought was put into choosing the right bacterium for building the system.

If the company has focused on safety over increased effectivity, deaths could have been avoided.

Let this be a lesson for future SynBio applications; only use species which are well understood.

Even today, nature holds plenty of surprises. ® MB

### iGEM 2016 Wageningen abstract

The abundance and diversity of our food relies on honeybee pollination. *Varroa destructor* mites weaken bee colonies through the spread of disease. Our team aims to save bees by killing *Varroa* using bacteria inside beehives.

In continuous conversation with beekeepers and scientists we develop a bacterium that targets mites, leaving bees and humans unaffected.

The hive-localized bacteria sense *Varroa* and produce mite-specific toxin, eliminating the need for beekeepers to dose the product.

The bacteria are dependent on a synthetic amino acid and are shut down by light to confine them to the hive. Additionally, we develop an *in vitro* test for *Varroa* toxicity to show the utility of our bacterium.

The system is modeled in various ways to assess its viability in the real world.

This is the first effective method to combine specificity, ease of use, safety through bio-containment, and the iGEM open source character to save the honeybee.

**Bee T**

**Varroa destructor control**

**Ready to use**

**Harmless to bees**  
**Effectively kills mites**

**Use the power of nature to fight off pests!**

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION** See manual for additional precautionary statements

Active ingredients:  
*Escherichia coli* GENETICALLY MODIFIED.....3.5%  
 Sucrose.....85.0%  
 Water.....11.5%  
 NET CONTENTS 2,5 KG

**iGEM**  
WAGENINGEN  
2016



# »»SCIENCE FICTION ... OR NOT?

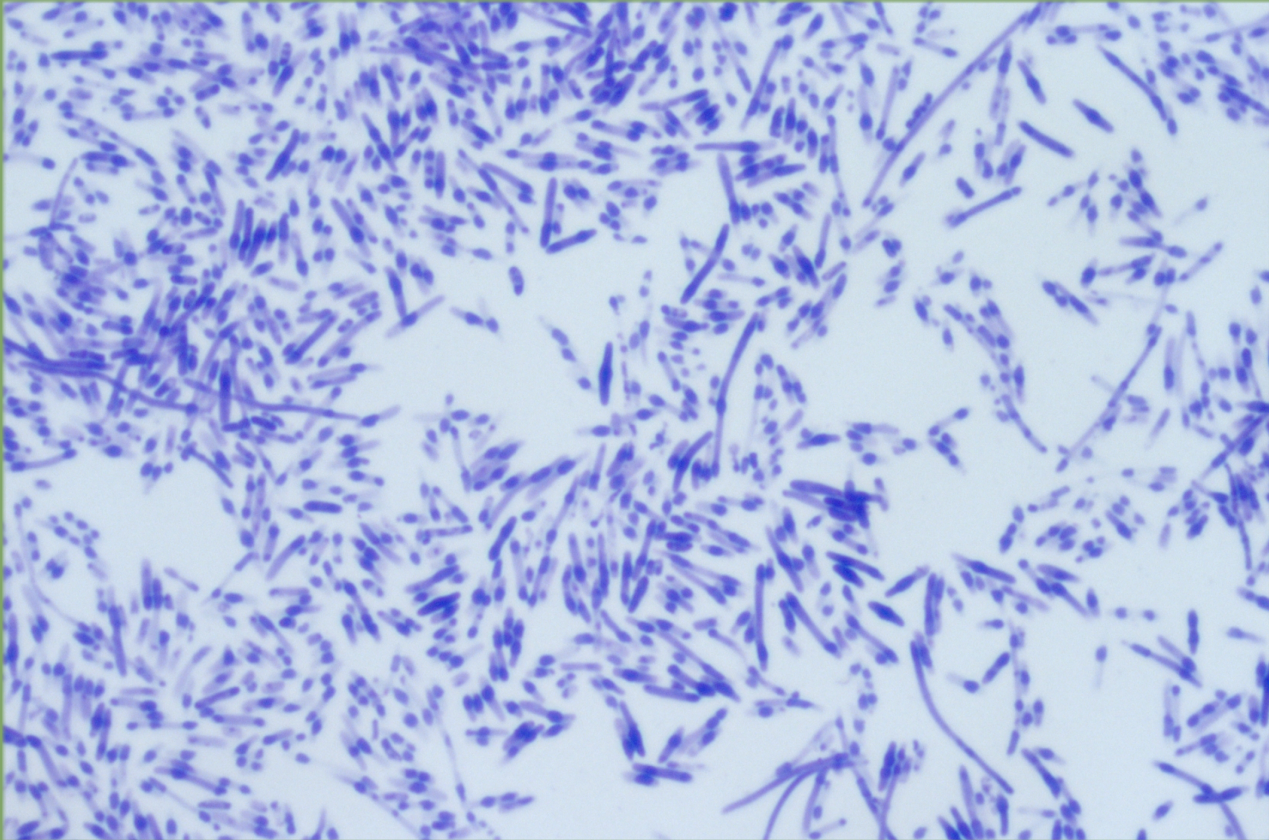


PHOTO: LISA RÖTTJERS  
SUBJECT: GMO ESCHERICHIA COLI EXPRESSING CRY1

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## Science fiction? No, real science!

Most of the articles we wrote are based on already published work.  
The references are listed below.

In theory, any of the articles in Resource2030 could become reality.

Will we cure disease or cause an environmental disaster?

It is up to us - the scientists, public and artists involved.

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Lisa Röttgers, iGEM Wageningen UR 2016

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